

Appl. No. : 10/070,214
Filed : October 18, 2002

REMARKS

In the Office Action, the Examiner suggested that the preamble of Claim 15 be rewritten to recite "a method of supplying heat ..." instead of "a method for supplying heat ..." at line 1 in order to positively set forth the structure of the production/injection line. The Examiner also questioned whether "transport channels" of the last line of the claim has the proper antecedent basis in the claim. The Applicant thanks the Examiner for these observations and by this paper amends Claim 15 accordingly.

The Examiner also rejected Claims 1-4, 9, 10, 20, 25, and 26 under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Stine et al (US 4,194,536) in view of Haug et al (US 5,813,106). The Applicant has carefully reviewed both the Stine et al '536 reference and the Haug et al '106 reference and respectfully notes that Stine et al '536 teaches a composite tubing product useful for conveying a fluid while maintaining or controlling the temperature of the fluid conveyed. The Stine et al '536 devices generally include a tubular fluid conveyance line 1 which is in thermal contact with one or more heating lines 2 or electrical heating lines 7. The fluid conveyance line 1 and heating lines 2 or 7 are covered with thermal barrier 3 comprising sheet-like layers of low-bulk low-density fibrous glass elements and in certain embodiments of the Stine et al '536 devices further includes binder member 8 comprising fibrous reinforcement strand made from an aromatic polyimide such as poly(ethylene) terephthalate the composite tubing product is also covered with an outer protective covering 5 made of a thermoplastic material such as polyvinylchloride, polyethylene, thermoplastic, rubber, nylon, polyurethane, or the like, or may be made from cross linkable materials such as rubber or other materials that may be suitably cross linked by chemical or irradiation means.

The Applicant respectfully notes however several omissions and failings in the teachings of Stine et al '536 as regards the Applicant's claimed invention. Firstly, the Applicant notes that the thermal barrier 3 is described as comprising one or more flexible flame resistant sheet-like layers of fibrous glass elements which clearly do not constitute "prefabricated inner and outer channel members having longitudinal channels" but rather are a continuous fibrous matt material in which it would not be readily feasible to prefabricate into shapes having predefined longitudinal channels. Secondly, the Applicant notes that Stine et al '536 offers no teaching that the thermal barrier 3 has different heat transfer properties along the radial extent of the thermal barrier material 3 but rather is of uniform material and construction offering

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substantially constant thermal transfer characteristics throughout the bulk of the thermal barrier

3. In contrast, the Applicant's claimed invention provides inner channel members having higher heat transfer properties and outer channel members having lower heat transfer properties such that the heat delivered by the means for active heating is preferentially transferred into the target production/injection tube and inhibited from transferring outside of the production/injection line assembly, e.g. to relatively cold exterior seawater.

Haug et al '106 teaches a method and machine for manufacturing an umbilical including in the closest embodiment as illustrated by Figures 6-8 an umbilical including a central core element 5 which is enclosed with a plurality of inner elongate channel elements 6 illustrated in more detail in Figure 7 and outer channel elements 9 shown in more detail in Figure 8. The inner 6 and outer 9 channel members of Haug et al '106 define a plurality of open channels configured to receive conduits 7 and/or cables 8 (*cf.* Column 4, Lines 1-24). "Channel elements 6, 9 may consist of extruded PVC profiles that are delivered in long lengths on wheels" (*cf.* Column 4, Lines 42-43). The Applicant respectfully notes that Haug et al '106 offers no teaching nor suggestion that the inner 6 and outer 9 channel members differ in their heat transfer properties and explicitly teaches the same material for their construction. Thus, the Applicant believes that Haug et al '106 also fails to teach or suggest the features of the Applicant's claimed invention of "wherein the inner channel members have higher heat transfer properties than the outer channel members so as to facilitate transfer of heat from the means for heating to the production injection tube and to inhibit heat transfer outwards from the production/injection line assembly" (Claim 1 as currently amended and similarly in Claims 25 and 26).

Thus, the Applicant believes that the teachings of Stine et al '536 and Haug et al '106 even when taken in combination fail to teach or suggest the Applicant's claimed invention as amended by this paper. Thus, the Applicant believes that Claims 1-4, 9, 10, 20, 25, and 26 as currently amended are allowable over the combined teachings of Stine et al '536 and Haug et al '106 under the requirements of 35 U.S.C. § 103(a). The Applicant has further reviewed the teachings of Bridges (US 5,751,895) and Butts (US 4,568,925) and ORION KIKAI KK (JP 11-90108) and further finds no teaching or suggestion of the additional limitations of the Applicant's claimed invention made by this paper of "wherein the inner channel members have higher heat transfer properties than the outer channel members so as to facilitate transfer of heat from the means for heating to the production injection tube and to inhibit the transfer outwards

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from the production/injection line assembly” thus the Applicant believes that currently rejected Claims 12, 14, 15, 16, and 21-24 are allowable over the art of record under the requirements of 35 U.S.C. § 103(a) due to their dependence on Claim 1 as amended by this paper.

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SUMMARY

From the foregoing, the Applicant believes that the application as amended by this paper is patentable under the requirements of 35 U.S.C. § 103(a) over the teachings of Stine et al '536, Haug et al '106, Butts '925, Bridges '895, and JP 11-90108 taken either independently or in any possible combination. Thus, the Applicant believes that the subject application is in a condition ready for allowance and respectfully requests the prompt issuance of a Notice of Allowability. The Applicant believes that this paper is fully responsive to the objections and rejections made by the Examiner in the Office Action, however should there remain any further impediments to the allowance of this application that might be resolved by telephone conference, the Examiner is respectfully requested to contact the Applicant's undersigned representative at the below-indicated telephone number.

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, to avoid abandonment of the application, or credit any overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: 11/29/04

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